Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Amendment of the Commission's Rules Concerning Maritime Communications	)	PR Docket No. 92-257
	)	
	)	
Petition for Rule Making filed by RegioNet Wireless License, LLC	)	RM-9664
	)	

To: Chief, Wireless Telecommunications Bureau

Comments
of Warren C. Havens on the
Third Further Notice of Proposed Rule Making

Warren C. Havens ("Havens") hereby submits the following comments on the Third Further Notice of Proposed Rule Making (the "3rd FNPRM") and offers to supplement with facts and letters of support from outside parties well known to the FCC and the wireless industry the suggestions made below, including via meeting(s) in person. I currently hold AMTS authorizations to serve five inland navigable waterways[1] and have pending applications to provide AMTS services to numerous other such waterways. I also hold licenses in the LMS, VPC, and 220 MHz services, and have a majority interest (on a fully diluted basis) in Net Radio Communications which holds 220 MHz licenses: all these licenses are listed in Exhibit 1 below. The background of myself and my main financial partner in wireless is also briefly noted in Exhibit 1. All these licenses will soon be transferred on a proforma basis to a legal entity named "Telesaurus" in which I will have a

[1] These AMTS license are for multi-site systems serving: the Carson River, Nevada, Lake Meade, Nevada, Great Salt Lake, Utah, and the Verde River and the Salt River, both in Arizona.

controlling interest. For convenience, herein I use "I" and "my" in regard to these licenses, although they will be soon be owned and then developed by Telesaurus.

I have submitted two Petitions for Reconsideration of certain decisions set forth in the above captioned docket, one regarding the Fourth Report and Order (the "Havens Recon"), and one regarding certain Procedural matters reported on in paragraphs 76 to 79.

When, in the Petition, I comment on other AMTS licensees, I do not mean to comment on any past matters with respect to Paging Systems, Inc. since I do not have the basis to do so: I have not substantially reviewed information with respect to its AMTS licenses and operations.

The Havens Recon: incorporation herein. To the degree that the matters I proposed in the Havens Recon are not accepted by the FCC with regard to the Forth Report and Order, I ask that the FCC consider the parts of the Havens Recon that relate to matters in the 3rdFNPRM (and support the alternative AMTS licensing scheme I suggest below) as comments on the 3rdFNPRM, and for that purpose, refer to and incorporate herein the Havens Recon. For example, in the Havens Recon, I comment on why the Fill-In station decision, left as it is, is likely to lead to the perpetuation of wide-scale spectrum warehousing in AMTS is that constitutes the predominant history and status of AMTS. (Much of the Havens Recon is included in Exhibit 3 below.)

AMTS spectrum and licensing: "NIRS" alternative scheme.

For the reasons given below, I propose that the FCC suspend its proposed plan to auction AMTS and the related rulemaking and instead commence a rulemaking along the

lines of the below. (The below also suggests items partly applicable if the FCC chooses to continue on the path described in the 3rd FNPRM.)

I am a long-time entrepreneur in mobile-radio-systems business, and holder of one of the larger aggregations of radio spectrum for new wide-area wireless,[2] and as such, I have focused on studying the history, status, and future of wireless in the United States ("US") and other nations. I strongly believe that, per the direction set forth in the 3rdFNPRM, the FCC, again,[3] is grossly behind in understanding of the needs and direction of the wireless markets and has set forth in the 3rdFNPRM a spectrum licensing plan that will result in gross under-utilization of the spectrum and years of attempts by market forces to try to "put Humpty Dumpty together again." Both the 220 MHz service and the neighboring AMTS (currently and as proposed in the 3rdFNPRM) (and IVDS) are "Humpty Dumpty" wireless, that is, off the wall of viable CMRS and broken up into small non-viable pieces. Once too much broken, all the King's (FCC's) forces and men will not be able to put HDW together again. Below, I first suggest an alternative to avoid

---

[2] The A block LMS licenses account for my largest holdings: 6 MHz, only modestly encumbered, in most all major US markets, over 160 million pops per most recent census. These will be combined with my other licenses for integrated systems, and with licenses of several other parties I am or expect to partner with, in the aggregate providing for near nationwide systems employing the complementary strenghts several radio bands and several advanced technologies.

[3] The US is seriously falling behind the European Community and Japan in wireless spectrum planning and licensing and 3G and 4G wireless technology. The FCC and US companies involved in wireless have not worked well together and have not taken the needed long-term approach as has the EC or Japan. *Spectrum auctions are not a panacea any more than deregulating utilities is a panacea.* (I am here in Northen California next to University of California Berkeley, and the electric power goes off these days, like in Calcutta. There are no magic simple "market" solutions in our complex society, and FCC should try new schemes such as I suggest herein.

more HDW and create a viable radio service.[4] I then comment on the 3rdFNPRM considering that the FCC may not accept the suggestion.

Two MHz of AMTS will not suffice to support a viable technology and service in the face of rapidly developing technology and wide-area systems based on the larger services: cellular, Nextel's 800 and 900 MHz, PCS, and upcoming 700 MHz services. Two MHz of 220-222 MHz has been a clear failure from its initial licensing via lotteries in the early 1990's.[5] Even after the 220 MHz auctions in the recent years, it is simply too small and too fractured for any vendor of advanced technology to adapt and manufacture it for this frequency band.[6] The same applies for AMTS.

---

[5] Soon after the 220 MHz service was initially licensed via lottery, I formed and was the head of SunCom Mobile and Data, Inc. which obtained management contracts for over 500 of the lottery-issued licenses. Via SunCom, I wrote and submitted to the FCC two petitions for relief to provide for a consolidation of these licenses into a multi-market wide-area network to be built over five years (similar to what Nextel proposed and was granted with regard to converting much of 800 MHz SMR to ESMR. In the Suncom petitions, I gave clear reasons why, short of allowing such a consolidation into a wide-area network with sufficient channel depth and construction period, 220 MHz would fail: vendors would not be motivated to produce viable product in sufficient quantities, insufficient end-user would subscribe to "Mom and Pop" systems with very limited channels, coverage, features, and future, etc.. The FCC decided to auction 220 MHz and denied the SunCom petitions, but what I predicted all came to pass. 220 MHz was a failure and continues to be a failure. (SunCom appealed ultimately to the Circuit Court. The case was dismissed for technical reasons relating to lack of standing.)

[6] I spent years in communication with virtually all major and many second- and third-tier equipment vendors attempting to get interest in 220 MHz, and more recently, AMTS. I ended up agreeing with the larger vendors that there is insufficient spectrum, especially as broken up among many licensees, to warrant the necessary cost to convert and manufactrure in small runs a major 2G digital technology (e.g., TETRA, iDEN, Tetrapol, GSM-R, GSM-Pro, or thee newer 2.5G and 3G technologies). Some smaller vendors have recently, or are in the process of, adapting older analog "MPT1327" two-way radio technology to the English Band III, which happens to include 217-222 MHz, but, there are not may applications where MPT1327, or any current pre-2G technolgy, will be viable in the face of competition from current wide-area high-capacity ditigal networks (including Nextel's ESMR) and all CMRS's upcoming rollouts of 2.5G and 3G which will have, or can easily be customized to provide, ESMR and PMR features and far more security and data speed and features. Also, proprietary technologies will not succeed in such small radio services. Those noted above, except for iDEN (which is proprietary), are all

I propose that AMTS be licensed via a Guard Band Manager ("GBM") concept per the following :

a) Auction Lease Bids: via auctions per lease bids: the FCC takes bids for the highest yearly lease fees, with some amount down payment, and some amount in payment of a bid total over a ten year period (initial license period), and thereafter, a modest annual rental fee based on gross revenues or other measure.[7]

b) Marine Priority: Marine radio service be given priority over land mobile (and fixed) services in designated areas if a study by the FCC determines the need for such not fulfilled by VPC and other services;[8]

c) 1 MHz General Commercial: 1 MHz may be used by the GBM for a combination of internal purposes and leasing to non-affiliated non-governmental entities;

---

open standard technologies under the European Technical Standards Institite (these standards are published and any vendor can manufacture products, unlike the case for proprietary technologies). For a open standard technology to be developed, there must be a large market with clear favorable licensing and a relatively small number of capable licensees. It takes several years for such a standard (even if it merely involves an adaptation of a current technology via rebanding and other routine engineering changes) to be adopted for any new radio service. Without such open standard technology, and at least two established vendors supplying system and end-user products to licensees and end users, the subject radio service will not succeed, or will at least have too great a risk to attempt to develop on a large scale. (Telemarketers and many "Mom and Pops" have attempted it and, over and over, have failed in 220 MHz, and all evidence and common sense is that similar attempts in AMTS have and will fail.

[7] This payment scheme will probably provide more revenue (including on a present-dollar basis) than a one-time all-cash payment basis as currently employed in FCC auctions. This payment schme is appropriate for the proposed Guard Band Manager concept for the proposed NIRS where the NIRS service requires more long-term planning and development than other radio service spectrum that has been and is to be auctioned, and that involves coordination of public and private sector wireless.

[8] It is doubtful that, in most areas of the US, there is a need for AMTS systems to provide such priority. The best way to provide reliable effective communication services to marine craft and those on board is to facilitate a service such as NIRS that will have the coverage, economies of scale, advanced technology, and integratation of private- and public- sector wireless that combined will provide far better and more extensive wireless than any more narrowly focused "marine" radio service.

d) 1 MHz "NIRS" Set-Aside: the other 1 MHz must be used internally for NIRS (see below) or leased for use by designated NIRS "national infrastructure entities" (see below) both governmental and non-governmental;

e) Open-Standard Technology: the radio technology for both NIRS band (see below) must be the same open-standard (approved by TIA, ETSI, etc.)[9];

f) NIRS, 4 bands: AMTS is designated as a National Infrastructure Radio Service ("NIRS") along with 220 MHz, LMS Multilateration[10] and LMS Non-Multilateration (together herein, "LMS"), and the recently allocated 5.9 GHz (a Transportation Infrastructure Radio Service) (herein, "5.9 GHz"), and all such NIRS be subject to certain rules to foster joint development for the purposes of NIRS. (See below, IVDS and 222-225 should also be integrated into NIRS.)

---

[9] An open standard takes more time than proprietary technology, but due to the nature of the proposed NIRS which requires longer-range planning and coordination between the named user entities, the time needed for developing an open standard is available. This is one case where the US can get ahead of the EC and Japan in wireless: developing a "4G" NIRS technology for the proposed NIRS frequency bands for the proposed advanced core infrastructure entity needs. I have spoken recently to the DARPA (the Defense Advanced Research Projects Agency) about this proposed NIRS multi-band nationwide service and technology as a major "home" for the 4G (forth generation) wireless initiative DARPA is commencing to enable the US to achieve parity (or better) relative to the EC and Japan in wireless technology. DARPA and I shared basic views of the need for the US to advance in 4G for commercial use (DARPA has military objectives as well) and the value of LMS spectrum (and as proposed herein, the other defined NIRS bands) for US-developed 4G, and we plan to explore this in the near future including in meetings at the FCC. LMS technology must involve, for optimum usage, certain interference excision and high-tier/ low-tier spectrum sharing technique which will also be essential in 4G; this provides additional cause for coordination with the DARPA US 4G initiative. Such 4G could be developed in parallel with deployment of appropriate current technology for NIRS adapted to be substantially forwardly compatible with the planned 4G.

[10] LMS Multilateration licensed systems must provide wide-area location services and may provide associated voice and data, including (as I plan for my LMS licensed systems) voice and data largely over the Internet and Intranets (as opposed to the Public Switched Network) (but with PSN voice and data for emergency situations).

These components listed above are discussed below after discussion of the overall concept. This concept is that AMTS and 220 MHz are still largely undeveloped,[11] as are LMS and 5.9 GHz, and together, these provide a needed combination of frequencies for the combination of macrocell, minicell, and picocell topologies needed for a nationwide service for major US infrastructure entities.[12] Such entities need a new integrated nationwide high-capacity[13] service to use as their primary radio service, or to use as a critical virtual-PMR adjunct (for redundancy, extra capacity, interoperability, and more advanced services) to their primary radio services, as further discussed below. I believe that what I am proposing here will be supported by the majority of existing licensees and "stakeholders" in the noted proposed component bands. [14] [15]

---

[11] These services, while in large part licensed, involve licenses that are very lightly loaded, and from evidence I have gained, pre-auction licenses reported as constructed are in many cases not actually in operation.

[12] Use of appropriate mobile satellite system for most remote areas may also be a valuable component of NIRS, such as the recently "rescured" Iridium system now targeted in large part to servce important needs in remote areas not covered or not covered well by terrestrial wireless networks.

[13] Without a very large market created by such nationwide high capacity service, there is not sufficient volume to warrant the cost of development of advanced digital 3G or 4G technology (e.g., involving expensive ASICS and other components) and the manufacturing volumes needed to obtain sufficiently low cost and advanced features to be successful. The best evidence is GSM: a large market was created by the EC member nations requiring GSM and allocating the radio spectrum for GSM. It thus took off and has now dominated worldwide wireless. An example at the other end of the scale is 220 MHz in the US: it "flopped" as noted in the text and footnotes above, as has AMTS to date.

[14] I can discuss the basis of this with the FCC if the FCC decides to consider an alternative licensing scheme as I propose herein. Essentially, I believe (and have had substantial communications to support my belief) that such licensees will expect the best financial return by participation in NIRS as the higest and best use of their spectrum.

[15] I am involved in all these bands, including as a potential "stakeholder" in 5.9 GHz, designated by the FCC, along with LMS, as a Transportation Infrastructure Radio Service.

The proposed NIRS end-user "infrastructure" entities include two main classes ('a' and 'b' below), and two other user classes ('c' and 'd' below) that may choose to participate.

a) Private-sector utility and transport entities: utilities (electric, gas, water), pipelines, transportation entities (rail, trucking, local transit, marine, highway departments, airport ground services, some Telematics service providers such as AAA).

b) Public-Sector land and real property agencies:[16] i.e., under the US Department of Interior[17] and Department of Agriculture[18] and the analogous State entities, and other such entities, private and public, involved in developing, providing, or managing basic infrastructure-based services and or public lands.[19]

c) ITS core-function entities and functions: A concept being discussed by stakeholders in US "Intelligent Transportation Systems" (such as among members of the ITS America) involves mandatory or wide-spread use in highway-capable vehicles of basic ITS functions such as location-based services for crash and emergency notification and information, providing to highway departments real-time data on

---

[16] Such public entities involve vast infrastructure to manage such lands and property, and thus have analgous wireless needs as the noted private sector infrastructure entities: both classes have vast physical improvements (roads, plant, buildings) and mobile workforce needing integrated mobile and fixed wireless over wide areas.

[17] National Park Service, BLM, etc.

[18] US Forest Service, Fish and Game, etc.

[19] There is a significant degree of correlation and interoperation between such private infrastructure entities and such public land and property entities, e.g., on rights of way, service to the public in emgergencies, wide-area radio coverage needs; and both classes need similar advanced radio services with features far advanced from those offered by current two-way radio systems and current and planned CMRS. Both classes also need interoperation between other such "infrastructure" entities.

highway traffic flows; providing to law enforcement entities information regarding defined major motor vehicle violations.[20] NIRS could provide such basic Telematics functions by design more effectively and at less cost than CMRS. NIRS could also serve to integrate these wide-area mobile radio ITS functions with the DSRC functions of LMS non-multilateration and 5.9 GHz.[21]

d) Public Safety entities may also choose to be an end user of NIRS for such noted adjunct purposes, described further below.

The above-noted private-sector NIRS entities need NIRS for primary wireless services since they do not at this time hold or have set aside by the FCC sufficient allocation of radio spectrum set aside for their needs.[22] The above-noted public-sector NIRS entities need NIRS for critical adjunct wireless services since NIRS will provide an otherwise non-obtainable nationwide radio service with mission-critical features at a low cost (partly in trade for infrastructure-use rights), such adjunct services providing (in addition to such entities primary radio services on its dedicated spectrum) (i) redundancy

---

[20] E.g., speeding and certain unsafe driving, unsafe condition of the vehicle, lack of valid vehicle registration, etc.

[21] DSRC stands for Dedicated Short Range Communications. DSCR is used in non-multilateration LMS such as for "smart tag" readers (e.g., as used as the toll booths along the Dulles Airport access toll road in northern Virginia), and several dozen more advanced formes of DSRC (each involving a very short range fixed transmitter along a roadway or facility used by vehicles to transmit one- or two-way data to the vehicle or users in the vehicle). Such pico cells, normally isolated (in current practice and as planned by those planning DSRC for the new 5.9 GHz TIRS radio service), can be beneficially integrated with NIRS, such as by NIRS: linking the DSRC sites via its wide-area backhaul network, exchanging traffic flow data; clearing some vehicles for toll payment prior to reaching toll booths; etc.

[22] I have met with leaders of many of these entities in the last eighteen months (since obtaining the radio licenses listed in Exhibit 1 below) and base this needs assesment on the views expressed to me by such leaders and their internal needs assesments. I have also found first-tier wireless equipment vendors who have independently come to the same assessment. Expert consultants in wireless have also confirmed such assessment.

and additional capacity for peak periods, emergencies, and failures of such primary service, (ii) interoperability among various such public-sector NIRS entities, with such private-sector NIRS entities, and with Public Safety entities who may also choose to use NIRS for such adjunct service. The use for ITS core functions is noted above and would be of substantial benefit to Highway Departments, Transit entities, Public Safety, and ultimately to US commerce and population in general as it would increase the safety and efficiency of roadway traffic.

Today, Information Technology is leading the world economy and wireless is a leading component in IT, often projected to soon have more traffic than wired networks. [23] Change is occurring rapidly and in wireless, and a new technology good enough for any nationwide deployment involves billions of dollars in development and construction and years of work. For this, there must first exist the underlying spectrum available of sufficient quantity and nature. For the proposed NIRS in the US, the proposed four frequency bands are ideal and (as noted above) they are currently still largely "available." They are ideal as follows described below, and partially depicted in Exhibit 2 below.

[23] Even is close to correct, there will be a need for many times the spectrum that exists in total that is usable for wide-area systems (several GHz down to 100 Mhz or thereabouts). The need for more spectrum for more and more advanced wireless is a major concern these days from commercial wireless operators and vendors, the FCC, Congress, the Executive Branch, and the Military (which wants to keep what it has in the face of demands to release spectrum to the burgeoning commercial wireless industry). NIRS as proposed herein should be seriously considered at this time for the critical US needs I have described while there exists the opportunity to develop NIRS around these four frequency bands. If not pursued at this time, LMS multilateration licensees will move on to other things-- we LMS licensees will have no other choice.

- 217-222 MHz (of AMTS and the 220 MHz services, including also 217-218 "IVDS"),[24] extended to 225 MHz by reallocating the 222-225 Amateur band to NIRS,[25] and possibly also including most or all of 216-217 MHz[26]: Thus, 4 MHz total if only AMTS and 220 MHz, and 7-9 MHz total with such extension(s). This frequency range is ideal for a base macro-cell layer to cover the majority of the land mass of the US, including smaller cities towns, rural plants and facilities, rough terrain, highways and railroads linking major markets, and modest-speed data links to vehicles with high-power mobile radios and high-gain antenna. These may also be used for certain remote fixed services and point-to-point links.

---

[24] IVDS, 220 MHz, and incumbent AMTS licensees could elect to become part of TIRS and adopt TIRS technology, and those that do not do so by the end of a certain reasonable period (such as the end of the first five after the end of the initial auction proposed herein of AMTS and 222-225 MHz) would be required to conform to TIRS technology and services.

[25] This band is not heavily used by Amateurs, e.g., as indicated by a review of catalogs of Amateur radio equipment. It is in the public interest to reallocate this to such NIRS purposes which are more critical to the US private and public sectors than the services contemplated by the FCC in the 3rd FNPRM for AMTS. I would propose that this reallocation licensing be done via auction at the same time as the AMTS auction and via the same NIRS-related Guard Band Manager sheme, but with the whole 222-222 MHz for the above described "NIRS Set-Aside" (proposed above for 1 of the 2 MHz in AMTS). In addition, by allocating 216-225 MHz or thereabouts as proposed, this frequency band component of NIRS could achieve a approximately a 4 MHz separation in Tx and Rx frequencies, if used in pairs for frequency division duplex ("FDD"). However, we would probably propose use of time division duplex ("TDD") (which achieves full duplex via rapidly alternating Tx and Rx on one frequency, not on separated frequency pairs, and thus is used with unpaired blocks of spectrum) as the primary diplexing technique due to multiple advantages including simpler end-user radios, and more spectrum efficiency especially for the contemplated *variable* asymmetrical up- and down- link IP-centric traffic, and leveraging the precise timing at each base station that NIRS would have for providing GPS-based location technology required for LMS and NIRS (network assisted GPS location techniques for both constant and periodic wireless location applications).

[26] With the techniques available in the contemplated 4G NIRS technology noted herein, I believe the TV channels below 216 MHz could be protected and the current uses also protected. At least, this should be studied. A goal of such 4G, including the DARPA 4G initiative, is to develop technology that, among other things, increases spectrum efficiency via interference excission and sharing of bands by multiple users.

- 902-928 MHz LMS: used for an overlaying mini-cell layer largely in the larger markets, busiest highway corridors, and other heavy use locations. These would also be used for a low-tier low-power "cordless phone" mode. (3G and 4G wireless generally contemplates both high-tier high-power mobile mode, and such low-tier mode, the two largely integrated.)
- 5.9 GHz: 75 MHz recently allocated by the FCC for ITS functions, used as noted above for DSRC. As proposed in this NIRS concept, it would also be used for high-speed backhaul, and where not needed along the highways for DSRC, it would be used for various peripatetic and fixed wireless services.[27]

The FCC should not move ahead at this time and auction AMTS. Due to the weaknesses in AMTS (and the adjacent 220 MHz service) noted above, and the fact that the FCC has already licensed AMTS covering the vast majority of the US population (and allowed "Fill-in" stations that will enable warehousing: see Exhibit 3 below), such an auction in the near future will yield small sums and not be yield the best use of AMTS. Instead, the FCC should via an appropriate rulemaking explore the NIRS concept for AMTS and the other noted bands. In parallel, the FCC should take the below-described action to ascertain whether any granted AMTS licenses should be revoked.

FCC Review of AMTS Licenses Reported as Constructed

The FCC should, as noted above, undertake a thorough survey of granted AMTS licenses, requiring their holders to submit proof that their AMTS licensed systems were

[27] As noted elsewhere herein, the 4G technology contemplated for NIRS will include techniques to enable sharing of a radio band by systems employing air interfaces whether directly overlaid or side-by-side.

timely placed into operation ("Construction" or Constructed") and kept in operation in full satisfaction of FCC rules. Licenses not in full compliance should be revoked, and sanctions imposed upon any findings of deliberate violation of rules, lack of candor, abuse of process, or other such willful circumvention of FCC rules and policies. Such proof should include, among other things, affirmative statements under penalty of perjury as to such full compliance, accompanied by full copies of documentation, with appropriate explanatory text for each category, evidencing:

- any violation of FCC rules including system parameters set forth in the licenses;
- system site leases, licenses, or other usage-rights agreements from the date of system Construction;
- system equipment purchases including evidence of automatic multi-site system capabilities;
- marketing materials and subscriber contracts evidencing the required priority service to marine traffic usage, and in general evidencing actual system operation;
- "management agreements" (with parties contracting with the licensee to operate the license);
- press releases and other documentation placed into the public domain by the licensee that related to the license and its operation.

In addition, if a licensee did not affirmatively report as timely constructed a license per the parameters set forth therein, such license should be revoked. For example, if a licensee reported a license as placed into operation on our about a date, and not on a date certain, or placed into operation for test purposes, or at a height or location not on the license, then such notifications should not be held to constitute the required evidence of

timely Construction. Such notifications should be deemed as defective as a new application lacking the engineering and continual-coverage showings required under the rules. There are only three AMTS licensees and a small number of waterway licenses, thus, this exercise will not be overly burdensome on the FCC. It can be seen to be a prudent exercise since it is clear from the public record (including the trade press, web sites of the largest AMTS licensee, discussions with equipment vendors and site owners, etc.) that AMTS has not been put to much use to date and there are very few subscribers, even of Watercom (now owned by Mobex). Since there are such few subscribers, the question arises as to how the licensees can afford to place and keep in operation so many stations using fairly expensive automated multi-site technology and whether they in fact have done and are doing so. [28]

In addition, the FCC should take back at least one of the two blocks licensed to Watercom since both blocks were licensed to Watercom based on a clearly defective, grossly overstated need showing.[29] Per records on file by Watercom's parent (soon before Watercom was sold to Mobex), and per written statements made to Warren Havens by legal counsel of Mobex, Watercom has only about 1,000 end-user radios in service. I have demonstrated in past filings with the FCC (see footnote last referenced above) that this

[28] In various petitions and replies to petitions I have filed with the FCC regarding AMTS matters, the suggestions and assertions in this paragraph are discussed at more length. I do not fully repeat these here.

[29] See 3rd FNPRM footnote 170: the referred-to need showing included system traffic projections (most likely, traffic over a period of time). If such traffic was never achieved or even approached after a such period of time, or any further reasonable period of time, certainly long before before Watercom sold its AMTS systems and business to Mobex (publicly revealing if not declaring the failure of such business: it is easy to deduce the approximate expenses of operating the licensed sites including plant depreciation, and the approximate revenues from about 1,000 subscribers,

level of loading is insufficient to even require a small number channels per site, what to speak of two MHz worth of AMTS. When a license for spectrum in excess of what would ordinarily be authorized is granted on the basis of an extraordinary need showing, and without such excess spectrum would not have been granted, then if such extraordinary need showing turns out to be grossly overstated or otherwise defective, then such "extra" or extraordinary spectrum (indeed, a rare monopoly in a radio service for virtually the entire center of the nation) should be revoked. Without such policy, the FCC invites frivolous, insincere, and defective petitions for extraordinary grants. Also, Havens notes that the FCC has been strict in decisions on applications for new AMTS authorizations, and has imposed a freeze (prohibition) on new applications, and even suspended processing applications submitted prior to the notice of such suspension. It would be consistent with such strict measures for the FCC to also at this time take the above steps regarding the "extra" Watercom spectrum, and the proof of rule compliance and license viability.

Other Comments, on particular sections of the 3rd FPRM

The following comments are provided in the alternative to the above suggested NIRS course of development and rulemaking involving AMTS spectrum. That is, to the degree the FCC rejects the above proposed NIRS concept for AMTS and proceed in the direction indicated in the 3rd FNPRM, then I offer the following comments.

Guard band manager: see comments above. (This would work best under a scheme such as the proposed NIRS, but would be useful in any case.)

---

and thereby understand the business failture), then the such showing should be deemed defective and thus the "extra" 1 MHz block revoked.

Auction bids: see comments above regarding bids that involve a reasonable down payment, a further amount in yearly lease payments, and a residual modest yearly payment thereafter. (This would work best under a scheme such as the proposed NIRS, but would be useful in any case.)

Service areas: REAG's are the smallest areas that should be used. Any smaller ones would lead to excess fragmentation in an already small radio service.

Public Safety Set Aside: the NIRS concept provide far better for a valuable use of AMTS and the other designated bands. A few AMTS channels in a weak AMTS (not apart of a concept such as NIRS) will not do Public Safety much good. They have the 700 MHz to look forward to as their new primary band, and a concept as NIRS would provide an ideal adjunct service as described above.

Spectrum per license: 1 MHz block. A bidder should be able to bid for both blocks in any given license area.

Co-channel separation, related service contour, and other related matters:

Co-channel separation should be the same as in the 220 MHz service. The FCC must apply one rule to all AMTS licenses, incumbent pre-auction licenses, and those licensed via auction.

Service contour and related "fill-in" sites: At least as important (as shown below), along with adopting such co-channel separation rule, and consistent with it (the service contour and co-channel interference measure are each based on real-life RF propagation), the FCC should adopt a service contour for the AMTS licenses requiring specified continuous coverage of subject waterways and allowed "fill-in" sites (such coverage and "fill-in" sites are based on coverage). I propose the service contour standard described by

Fox Ridge Communications in all my AMTS applications: 37 dBuV/m (46 dBuV/m uncorrected). The FCC has permitted AMTS licensees authorized to cover coastal waters and some major inland waterways to use weaker-strength larger contours; however, see discussion in Exhibit 3 below for a necessary adjustment at this time.

Mobile to Mobile service should be permitted.

Service to major waterways, for auctioned licenses. The FCC should broaden the list of major waterways to reflect all those that carry substantial traffic, including as determined by the US Coast Guard and Army Corps of Engineers.

TV Protection. The FCC should maintain the rules regarding required engineering showings to protect TV stations. It should require use of the standards in the Eckert Report unless and until it determines that there is a better standard. It leads to unfair and inconsistent treatment of licenses to leave the standard undefined (only suggesting the Eckert Report as one legitimate standard). I have in all my one-hundred plus AMTS station applications been able to comply with this report, and found its standards acceptable to TV stations. A new study may be warranted, but until properly defined and completed, the use of the standards in the Eckert Report should be required. That a new study has not been undertaken is further evidence that AMTS should not be moved forward into auction licensing at this time.

Amateur radio should be removed from AMTS spectrum. See discussion above.

Spectrum cap: A party should be permitted to acquire all AMTS in any region.

Notification to TV stations should require a copy of the AMTS application to be sent on or before the date of filing at the FCC, not a mere notice of such filing. This is not a hard burden.

Construction and coverage time frames and standards: same as in VPC, however, there is currently no viable open standard technology for AMTS in my view.[30] This also argues in favor of a shift from the auction concept in the 3rd FNPM to or toward that I propose above as NIRS.

Again, my strong view is that, without adoption of a plan such as the NIRS plan outlined above, AMTS will at best flounder for years as has 220 MHz, and thus, I have concentrated my comments on the NIRS proposal.

[Execution on following page.]

[30] LTR is not a viable product these days (at least not worth investment in new systems) and MPT1327 is only now being made available in reasonably viable systems and end-user products, but the latter are still being completed and type accepted. There is still only one vendor with a handheld MPT1327 radio that is type accepted for AMTS and it is not a well designed product. MPT1327 vendors do not appear to be keen on AMTS for all the reasons I note in the earlier sections of this document.

Respectfully submitted,

Warren C. Havens

2509 Stuart Street
Berkeley, CA 94705
Phone: 510 841 2220
Facsimile: 510 841 2226

FCC - Ven H a Hanton

Exhibit 1

List of FCC licenses held by Warren Havens[31]

(to be soon transferred to Telesaurus
an entity developed by Mr. Havens and financial backers,
in which Mr. Havens shall retain controlling interest and management rights)

As of December 2000

Telesaurus Holdings LLC
Telesaurus Operating LLC

Ownership, key staff and consultants

Mr. Havens is in the process of setting up Telesaurus Holdings LLC for holding the VPC, LMS, and 220 MHz licenses listed below in his name, and Telesaurus Operating LLC (together herein, "Telesaurus") to manage these assets. Mr. Havens has financial backing from a long-term associate from the cellular industry, Arnold Leong, who will be an equity holder with Mr. Havens in Telesaurus.

Jimmy Stobaugh serves as Manager and ***Bill Pierce*** as Vice President. Bill has established and managed cellular and other wireless systems in Texas and the Alabama.

Warren Havens, of Berkeley, California, has founded, planned, and developed various wireless companies since the late 1980's, including a RSA CellularOne operating company in which he had substantial interest that he sold in 1998-1999. He has a strong background in all aspects of business development, including research, planning, strategy, marketing, legal, finance, and management. He is also active in philanthropic foundations and is an avid cyclist.

Arnold Leong, of Reno Nevada (and the Bay Area) and associates owned and operated two cellular companies in Texas and Alabama (approximately 400,000 pops). They sold these last year. Mr. Leong has a wireless industry background similar to Mr. Havens.

Consultants:

Ralph Haller, Gary Stanford, John Thymer, Fox Ridge Communications, Gettysburg, Pa. Ralph is the principal in Fox Ridge, providing consulting services for wireless licensees and operators including FCC matters (licensing, petitions, rulemaking and other proceedings), systems planning, etc. He is former Chief of the FCC Private Radio Bureau including the years when the rules for the LMS band were developed and adopted. He advises NRG and Telesaurus on a wide range of wireless business, regulatory, and technical matters. Gary and John, also formerly at the FCC in senior positions (engineering), are lead engineers on some of our current projects.

[31] Licenses of Net Radio Group Communications LLC are also listed. Mr. Havens was a founder of this company and on a fully diluted attributed-interest basis has a majority interest in it. Mr. Havens does not currently manage or control this company but maintains his rights and interests.

Andrew Bateman, Ph.D., Principal at Avren (www.avren.com). Formerly, Business Development Director, Wireless Systems International, Bristol, England. Andy provides engineering advice to us in selection of technologies, system planning, and other matters.

Brian Agee, Ph.D., San Jose, California. Consultant engineer for our National Infrastructure Radio Service ("NIRS") project. Brian was lead engineer or substantially involved in various major wireless ventures, including the AT&T "Project Angel."

Michele Farquhar and other attorneys, Hogan & Hartson, Washington DC, Denver, etc. FCC-law and corporate counsel to Telesaurus entities. Hogan & Hartson is a leading international law firm with strong practices in communications, corporate, M & A, IP, and other areas of law. Before joining this law firm Michele was Chief of the Wireless Telecommunications Bureau at the FCC.

AMTS Licenses of W. Havens

1. Lake Mead: Lake Mead
2. Great Salt Lake
3. Carson River, Nevada
4. Verde River, Arizona
5. Salt River, Arizona

Many pending AMTS applications.

Location and Monitoring Service (LMS") licenses of W. Havens (see notes below)

West Coast	**34,036,721**	
Rockies	**11,282,248**	
East Coast	**53,524,349**	
Florida & Gulf	**15,873,915**	
Texas	**13,412,760**	
"Graceland"	**6,868,489**	
Great Lakes	**18,064,423**	
Total	**153,062,905**	
% of US pops		**60.6%**
Total with Pending*	**157,952,050**	
% of US pops		**62.5%**

	population	
West Coast		
Seattle- Tacoma	3,445,064	
Portland	2,310,060	
Eugene	689,659	
San Fran - N. Cal	8,033,134	
* *Sacramento*		*(see Pending)*
Fresno	1,168,970	
Los Angeles	15,891,818	
San Diego	2,498,016	
		34,036,721
Rockies		
Spokane	691,806	
Boise	408,246	
Idaho Falls	263,379	
Twin Falls	136,831	
Casper	382,095	
Denver	3,031,140	
Salt Lake City	1,635,998	
Reno	511,004	
Flagstaff	299,753	
Albuquerque	762,814	
Phoenix	2,365,002	
Tucson	794,180	
		11,282,248
Texas		
Dallas	6,180,783	
Houston	4,567,679	
Austin	922,307	
San Antonio	1,741,991	

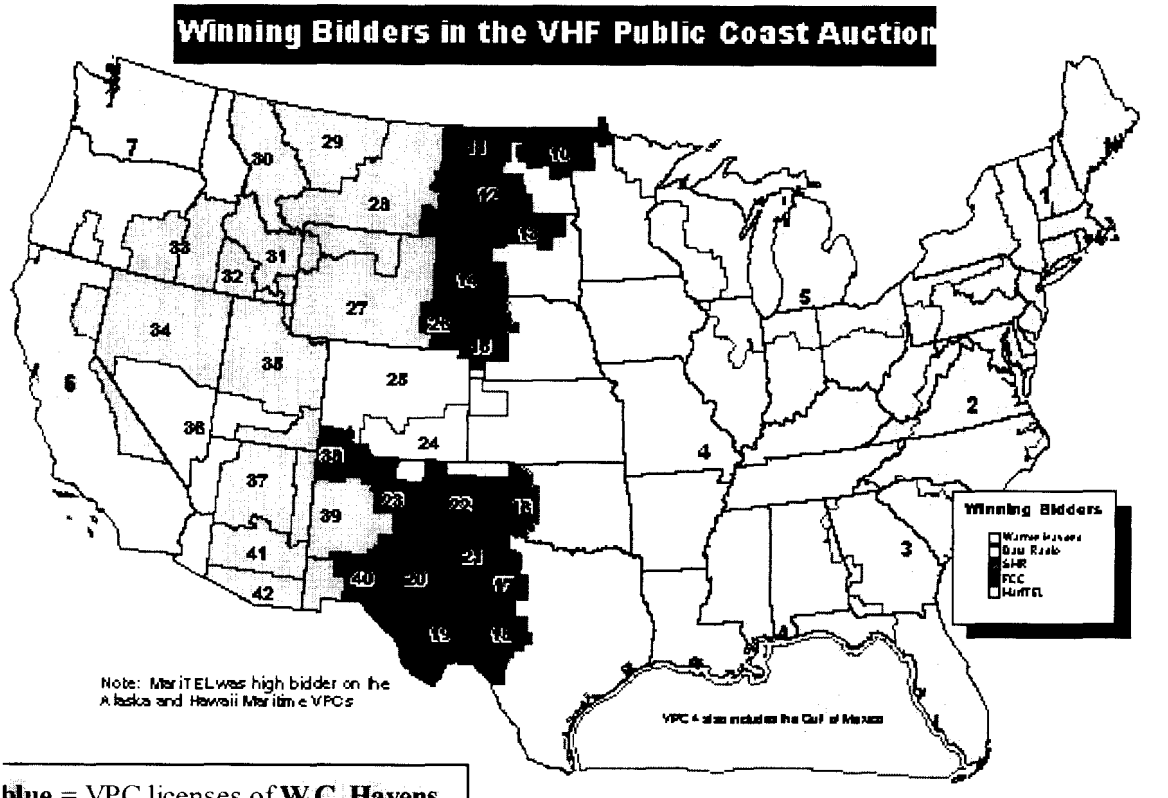
	(1990) Population	
East Coast		
Boston	7,445,016	
New York	23,919,008	
Philadelphia	6,915,860	
Washington DC	7,454,633	
Richmond	1,247,627	
Raleigh	1,412,330	
Greensborough	1,604,323	
Charlotte	1,626,519	
Columbia	815,834	
Greenville	1,083,199	
		53,524,349
Florida & Gulf		
Savannah	550,623	
Jacksonville	1,557,922	
Orlando	2,836,481	
Miami	4,538,394	
Ft. Myers	487,212	
Sarasota	624,323	
Tallahassee	610,116	
Montgomery	440,228	
Mobile	607,965	
Jackson	1,328,647	
New Orleans	1,635,720	
Baton Rouge	656,284	
		15,873,915
"Graceland"		
Lexington	1,731,306	
Nashville	2,002,283	
Memphis	1,687,817	
Little Rock	1,447,083	
		6,868,489
Great Lakes		
Detroit	6,626,919	
Chicago	9,317,947	
Milwaukee	2,119,557	
* *Minneapolis*		
		18,064,423

**** Pending?***	(see note)
Minneapolis	3,945,443
Las Vegas	943,702

	13,412,760	4,889,145

Notes

1. Population data per April 1990 U.S. Census, as published in the FCC Auction 21 (LMS) Bidder Information Package 12/15/98 p.16-20) US 1990 population total = 252,556,989
2. All markets named are "Economic Areas" or "EA's. " They form contiguous multi-state regions.
3. In each market, Mr. Havens obtained an "A" block license: 6 MHz total: 904 - 909.750 MHz, and 927.750 - 928 MHz.
4. "Pending" refers to bids we have on markets that may be awarded after the auction since the high bidder, by the rules, can't hold these licenses.
5. FRC Inc. (owned by Bruce Fox), owns additional LMS 'A' block licenses and intends to cooperate with Mr. Havens to develop LMS for NIRS.



blue = VPC licenses of **W.C. Havens**

VPC licenses and channels of W. Havens

Table 1
Licenses & classes

lic., #	lic. class*
27	INB-1
28	IB
29	IB
30	IB
33	INB-1
34	INB-1
37	INB-1
39	INB-1
41	INB-1
42	INB-1
31	INB-2
32	INB-2
35	INB-2
(see turquoise below)	

Table 2
Channels in license classes:
in channel-# numeric order

ch.#	frequencies	
IB & INB-1 class		
24	157.200	161.800
25	not available	
26	157.300	161.900
27	157.350	161.950
28	157.400	162.000
85	157.275	161.875
86	157.325	161.925
87	157.375	161.975
INB-2 class		
(only dif. is 84 not 85)		
24	157.200	161.800
25	not available	
26	157.300	161.900
27	157.350	161.950
28	157.400	162.000
84	157.225	161.825
86	157.325	161.925

Table 3
Channels in all 3 classes:
in order of frequency

ch.#	frequencies		*note*
24	157.200	161.800	*25 kHz*
84	157.225	161.825	*between*
25	not available		*channels*
85	157.275	161.875	
26	157.300	161.900	
86	157.325	161.925	
27	157.350	161.950	
87	157.375	161.975	

*** Notes**
- **IB** = Inland Border VPC license class
  -- see map: along Canadian border
- **INB-1** = Inland Non-Border " "
- **INB-2** = " " , but ch. 84, not 85
- All data from FCC website, 8-4-99
  (see http://www.fcc.gov/wtb/auctions/)
- I am currently negotiating for Denver 25, Pueblo 24, L. Vegas, 36) (in **yellow**)

			87	157.375	161.975	- Next auction I will bid for most in **blue**.

220-222 MHz licenses of Net Radio Group Communications (nrg) and W. Havens (wh)
Obtained at FCC auctions, end 1998 and mid 1999

license		kHz	market	population	
EAG001	**G**	**150**	**Northeast**	**41,567,654**	----wh
EAG005	**F**	**150**	**Central/Mountain**	**40,926,336**	nrg
EAG005	**G**	**150**	**Central/Mountain**	**40,926,3.**	nrg
EAG005	**H**	**150**	**Central/Mountain**	**40,926,336**	nrg
EAG006	**G**	**150**	**Pacific**	**41,437,956**	nrg
EAG006	**H**	**150**	**Pacific**	**41,437,956**	nrg
BEA001	A	100	Bangor, ME	533,135	----wh
BEA001	B	100	Bangor, ME	533,135	----wh
BEA001	C	100	Bangor, ME	533,135	----wh
BEA001	E	100	Bangor, ME	533,135	----wh
BEA002	A	100	Portland, ME	694,793	----wh
BEA004	A	100	Burlington, VT-NY	568,377	----wh
BEA004	B	100	Burlington, VT-NY	568,377	----wh
BEA004	D	100	Burlington, VT-NY	568,377	----wh
BEA006	C	100	Syracuse, NY-PA	1,934,632	----wh
BEA006	D	100	Syracuse, NY-PA	1,934,632	----wh
BEA009	C	100	State College, PA	798,826	----wh
BEA011	A	100	Harrisburg-Lebanon-Carlisle, P	1,026,459	----wh
BEA013	C	100	Washington-Baltimore, DC-MD-VA	7,454,633	----wh
BEA014	D	100	Salisbury, MD-DE-VA	290,800	----wh
BEA016	A	100	Staunton, VA-WV	301,626	----wh
BEA016	C	100	Staunton, VA-WV	301,626	----wh
BEA045	E	100	Johnson City-Kingsport-Bristol	524,270	----wh
BEA053	A	100	Pittsburgh, PA-WV	3,003,172	----wh
BEA053	C	100	Pittsburgh, PA-WV	3,003,172	----wh
BEA058	A	100	Northern Michigan, MI	230,066	----wh
BEA058	D	100	Northern Michigan, MI	230,066	----wh
BEA059	A	100	Green Bay, WI-MI	624,600	----wh
BEA059	C	100	Green Bay, WI-MI	624,600	----wh
BEA060	A	100	Appleton-Oshkosh-Neenah, WI	380,610	----wh
BEA061	A	100	Traverse City, MI	238,720	----wh
BEA061	B	100	Traverse City, MI	238,720	----wh
BEA061	D	100	Traverse City, MI	238,720	----wh
BEA063	B	100	Milwaukee-Racine, WI	2,119,557	----wh
BEA091	E	100	Fort Smith, AR-OK	286,113	----wh
BEA092	D	100	Fayetteville-Springdale-Rogers	285,955	----wh
BEA094	C	100	Springfield, MO	712,422	----wh
BEA105	C	100	La Crosse, WI-MN	220,502	----wh
BEA105	D	100	La Crosse, WI-MN	220,502	----wh
BEA108	A	100	Wausau, WI	451,533	----wh
BEA108	B	100	Wausau, WI	451,533	----wh
BEA109	A	100	Duluth-Superior, MN-WI	340,675	----wh
BEA109	B	100	Duluth-Superior, MN-WI	340,675	----wh
BEA109	C	100	Duluth-Superior, MN-WI	340,675	----wh
BEA109	D	100	Duluth-Superior, MN-WI	340,675	----wh
BEA110	A	100	Grand Forks, ND-MN	240,827	----wh
BEA110	B	100	Grand Forks, ND-MN	240,827	----wh

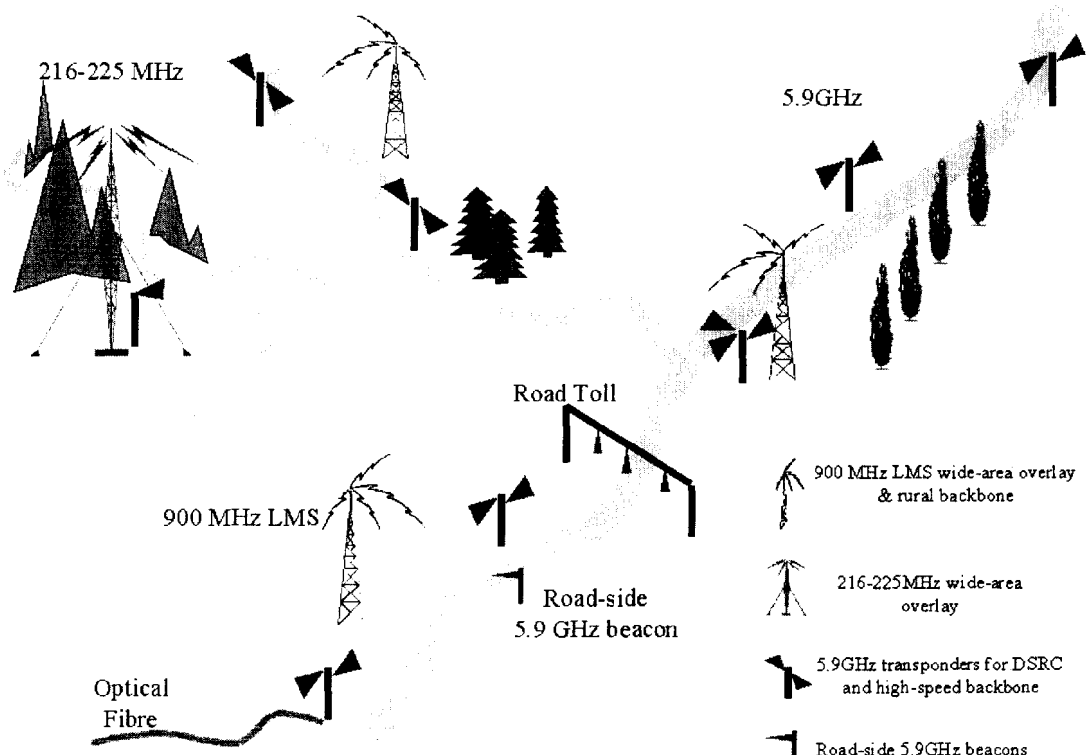
BEA110	C	100	Grand Forks, ND-MN	240,827	----wh
BEA110	D	100	Grand Forks, ND-MN	240,827	----wh
BEA110	E	100	Grand Forks, ND-MN	240,827	nrg
BEA111	A	100	Minot, ND	116,054	----wh
BEA111	B	100	Minot, ND	116,054	----wh
BEA111	C	100	Minot, ND	116,054	----wh
BEA111	D	100	Minot, ND	116,054	----wh
BEA111	E	100	Minot, ND	116,054	----wh
BEA112	A	100	Bismarck, ND-MT-SD	172,204	----wh
BEA112	B	100	Bismarck, ND-MT-SD	172,204	----wh
BEA112	C	100	Bismarck, ND-MT-SD	172,204	----wh
BEA112	D	100	Bismarck, ND-MT-SD	172,204	----wh
BEA112	E	100	Bismarck, ND-MT-SD	172,204	nrg
BEA113	B	100	Fargo-Moorhead, ND-MN	347,670	----wh
BEA113	C	100	Fargo-Moorhead, ND-MN	347,670	----wh
BEA113	D	100	Fargo-Moorhead, ND-MN	347,670	----wh
BEA113	E	100	Fargo-Moorhead, ND-MN	347,670	nrg
BEA114	C	100	Aberdeen, SD	84,696	----wh
BEA114	D	100	Aberdeen, SD	84,696	----wh
BEA114	E	100	Aberdeen, SD	84,696	nrg
BEA115	C	100	Rapid City, SD-MT-ND-NE	199,782	----wh
BEA115	D	100	Rapid City, SD-MT-ND-NE	199,782	----wh
BEA115	E	100	Rapid City, SD-MT-ND-NE	199,782	nrg
BEA116	A	100	Sioux Falls, SD-IA-MN-NE	478,307	nrg
BEA116	B	100	Sioux Falls, SD-IA-MN-NE	478,307	nrg
BEA116	C	100	Sioux Falls, SD-IA-MN-NE	478,307	nrg
BEA116	D	100	Sioux Falls, SD-IA-MN-NE	478,307	nrg
BEA116	E	100	Sioux Falls, SD-IA-MN-NE	478,307	nrg
BEA117	A	100	Sioux City, IA-NE-SD	239,518	nrg
BEA117	B	100	Sioux City, IA-NE-SD	239,518	nrg
BEA117	C	100	Sioux City, IA-NE-SD	239,518	nrg
BEA117	D	100	Sioux City, IA-NE-SD	239,518	nrg
BEA117	E	100	Sioux City, IA-NE-SD	239,518	nrg
BEA118	B	100	Omaha, NE-IA-MO	958,815	nrg
BEA118	C	100	Omaha, NE-IA-MO	958,815	nrg
BEA118	D	100	Omaha, NE-IA-MO	958,815	nrg
BEA118	E	100	Omaha, NE-IA-MO	958,815	nrg
BEA119	C	100	Lincoln, NE	341,684	nrg
BEA119	E	100	Lincoln, NE	341,684	nrg
BEA120	C	100	Grand Island, NE	277,509	----wh
BEA120	D	100	Grand Island, NE	277,509	----wh
BEA120	E	100	Grand Island, NE	277,509	nrg
BEA121	C	100	North Platte, NE-CO	60,432	----wh
BEA121	D	100	North Platte, NE-CO	60,432	----wh
BEA121	E	100	North Platte, NE-CO	60,432	nrg
BEA122	B	100	Wichita, KS-OK	1,094,213	nrg
BEA122	C	100	Wichita, KS-OK	1,094,213	nrg
BEA122	E	100	Wichita, KS-OK	1,094,213	nrg
BEA126	D	100	Western Oklahoma, OK	144,847	----wh
BEA129	E	100	San Angelo, TX	189,093	----wh
BEA135	E	100	Odessa-Midland, TX	382,517	----wh
BEA137	D	100	Lubbock, TX	357,092	----wh
BEA138	C	100	Amarillo, TX-NM	448,258	----wh

BEA138	D	100	Amarillo, TX-NM	448,258	----wh
BEA139	B	100	Santa Fe, NM	208,689	nrg
BEA139	C	100	Santa Fe, NM	208,689	nrg
BEA139	D	100	Santa Fe, NM	208,689	nrg
BEA139	E	100	Santa Fe, NM	208,689	nrg
BEA140	A	100	Pueblo, CO-NM	247,124	nrg
BEA140	B	100	Pueblo, CO-NM	247,124	nrg
BEA140	C	100	Pueblo, CO-NM	247,124	nrg
BEA140	D	100	Pueblo, CO-NM	247,124	nrg
BEA140	E	100	Pueblo, CO-NM	247,124	nrg
BEA141	C	100	Denver-Boulder-Greeley, CO-KS-NE	3,031,140	nrg
BEA141	D	100	Denver-Boulder-Greeley, CO-KS-NE	3,031,140	nrg
BEA142	C	100	Scottsbluff, NE-WY	91,975	----wh
BEA142	D	100	Scottsbluff, NE-WY	91,975	----wh
BEA142	E	100	Scottsbluff, NE-WY	91,975	nrg
BEA143	A	100	Casper, WY-ID-UT	382,095	nrg
BEA143	B	100	Casper, WY-ID-UT	382,095	nrg
BEA143	C	100	Casper, WY-ID-UT	382,095	nrg
BEA143	D	100	Casper, WY-ID-UT	382,095	nrg
BEA143	E	100	Casper, WY-ID-UT	382,095	nrg
BEA144	A	100	Billings, MT-WY	362,513	nrg
BEA144	B	100	Billings, MT-WY	362,513	nrg
BEA144	C	100	Billings, MT-WY	362,513	nrg
BEA144	D	100	Billings, MT-WY	362,513	nrg
BEA144	E	100	Billings, MT-WY	362,513	nrg
BEA145	A	100	Great Falls, MT	163,284	nrg
BEA145	B	100	Great Falls, MT	163,284	nrg
BEA145	C	100	Great Falls, MT	163,284	nrg
BEA145	D	100	Great Falls, MT	163,284	nrg
BEA145	E	100	Great Falls, MT	163,284	nrg
BEA146	A	100	Missoula, MT	333,984	nrg
BEA146	B	100	Missoula, MT	333,984	nrg
BEA146	C	100	Missoula, MT	333,984	nrg
BEA146	D	100	Missoula, MT	333,984	nrg
BEA146	E	100	Missoula, MT	333,984	nrg
BEA148	A	100	Idaho Falls, ID-WY	263,379	nrg
BEA148	B	100	Idaho Falls, ID-WY	263,379	nrg
BEA148	C	100	Idaho Falls, ID-WY	263,379	nrg
BEA148	D	100	Idaho Falls, ID-WY	263,379	nrg
BEA148	E	100	Idaho Falls, ID-WY	263,379	nrg
BEA149	A	100	Twin Falls, ID	136,831	nrg
BEA149	B	100	Twin Falls, ID	136,831	nrg
BEA149	C	100	Twin Falls, ID	136,831	nrg
BEA149	D	100	Twin Falls, ID	136,831	nrg
BEA149	E	100	Twin Falls, ID	136,831	nrg
BEA150	A	100	Boise City, ID-OR	408,246	nrg
BEA150	B	100	Boise City, ID-OR	408,246	nrg
BEA150	C	100	Boise City, ID-OR	408,246	nrg
BEA150	D	100	Boise City, ID-OR	408,246	nrg
BEA150	E	100	Boise City, ID-OR	408,246	nrg
BEA151	A	100	Reno, NV-CA	511,004	nrg
BEA151	B	100	Reno, NV-CA	511,004	nrg
BEA151	C	100	Reno, NV-CA	511,004	nrg

BEA151	D	100	Reno, NV-CA	511,004	nrg
BEA152	A	100	Salt Lake City-Ogden, UT-ID	1,635,998	nrg
BEA152	B	100	Salt Lake City-Ogden, UT-ID	1,635,998	nrg
BEA152	D	100	Salt Lake City-Ogden, UT-ID	1,635,998	nrg
BEA152	E	100	Salt Lake City-Ogden, UT-ID	1,635,998	nrg
BEA153	C	100	Las Vegas, NV-AZ-UT	943,702	nrg
BEA153	D	100	Las Vegas, NV-AZ-UT	943,702	nrg
BEA154	A	100	Flagstaff, AZ-UT	299,753	nrg
BEA154	B	100	Flagstaff, AZ-UT	299,753	nrg
BEA154	C	100	Flagstaff, AZ-UT	299,753	nrg
BEA154	D	100	Flagstaff, AZ-UT	299,753	nrg
BEA154	E	100	Flagstaff, AZ-UT	299,753	nrg
BEA155	A	100	Farmington, NM-CO	150,155	nrg
BEA155	B	100	Farmington, NM-CO	150,155	nrg
BEA155	C	100	Farmington, NM-CO	150,155	nrg
BEA155	D	100	Farmington, NM-CO	150,155	nrg
BEA155	E	100	Farmington, NM-CO	150,155	nrg
BEA156	A	100	Albuquerque, NM-AZ	762,814	nrg
BEA156	C	100	Albuquerque, NM-AZ	762,814	nrg
BEA156	D	100	Albuquerque, NM-AZ	762,814	nrg
BEA156	E	100	Albuquerque, NM-AZ	762,814	nrg
BEA157	A	100	El Paso, TX-NM	807,501	nrg
BEA157	D	100	El Paso, TX-NM	807,501	nrg
BEA158	B	100	Phoenix-Mesa, AZ-NM	2,365,002	nrg
BEA158	C	100	Phoenix-Mesa, AZ-NM	2,365,002	nrg
BEA159	A	100	Tucson, AZ	794,180	nrg
BEA159	B	100	Tucson, AZ	794,180	nrg
BEA159	E	100	Tucson, AZ	794,180	nrg
BEA162	E	100	Fresno, CA	1,168,970	nrg
BEA164	D	100	Sacramento-Yolo, CA	1,935,487	nrg
BEA164	E	100	Sacramento-Yolo, CA	1,935,487	nrg
BEA165	A	100	Redding, CA-OR	307,572	nrg
BEA165	B	100	Redding, CA-OR	307,572	nrg
BEA165	C	100	Redding, CA-OR	307,572	nrg
BEA165	D	100	Redding, CA-OR	307,572	nrg
BEA165	E	100	Redding, CA-OR	307,572	nrg
BEA169	E	100	Richland-Kennewick-Pasco, WA	545,747	nrg
BEA171	A	100	Anchorage, AK	550,043	nrg
BEA171	B	100	Anchorage, AK	550,043	nrg
BEA171	C	100	Anchorage, AK	550,043	nrg
BEA171	D	100	Anchorage, AK	550,043	nrg
BEA171	E	100	Anchorage, AK	550,043	nrg
BEA172	B	100	Honolulu, HI	1,108,229	nrg
BEA172	C	100	Honolulu, HI	1,108,229	nrg
BEA172	D	100	Honolulu, HI	1,108,229	nrg

Exhibit 2

Depiction of the Multi-band National Infrastructure Radio Service



Proposed NIRS Infrastructure, p. 1 of 2

Proposed NIRS Infrastructure, p. 2 of 2

(further depiction of roadway DSRC and other use of 5.9 GHz)

The below if from one of the two Petitions for Reconsideration of Warren Havens of the Forth Report and Order. Provided here for reasons noted in the text above.

Fill-in Stations. Report and Order paragraph 12, and corresponding rule change: The Decision in paragraph 12 provides:

> . . we will revise our Rules to eliminate the application and engineering study requirements and . . . for new AMTS stations whose predicted interference contours do not encompass any land area beyond the composite interference contour of the applicant's existing system. . . .Fill-in stations . . . .[herein, "Fill-in Stations"]

The corresponding revised Final Rule adds: "or the proposed station's predicted interference contour extends the system's composite interference contour over water only (disregarding uninhabited islands) . . . ." as further definition of a Fill-in Station. (From 80.475(b). Also in 80.215(h)(2).)

Meaning of "Existing System" and related. By the term "existing system," does the FCC mean the existing licensed system, whether not any or all licensed transmitter stations that together constitute the "existing system"' ("Component Stations") have been timely placed into operation and kept in operation (the "Licensed System"), or, does this term mean only the portion of such licensed system made up of the Component Stations that have been so placed and kept in operation (the "Operational System")? If the FCC means the latter (Operational System), then I propose the former (Licensed System)[32]. The confusion is in the use of the word "existing" which may imply a station that has been put into operation or "existence" as opposed to merely authorized.

---

[32] In Comments I will be submitting with respect to the Proposed Rules for AMTS set forth in the Report and Order contained in the above-captioned document, I will not why in my view this Fill-In Station rule change, intereperted either way described above, must be accompanied by certain additional rule changes to avoid abuse and be more clearly in the public interest.

The interpretation I propose would be in the public interest. AMTS involves multi-site systems to cover a waterway (coastal or inland) in which, often, it makes or will make most business sense to place the licensed Component Stations in operation sequentially, first covering the area of most demand, and adding others later. Fill-in stations may be needed to augment some Component Stations placed into operation prior to all of the Component Stations being placed into operation, and those Fill-in stations may be within the predicted interference contours of the Licensed System, but not within the interference contours of the Component Stations that have been, at such point in time, placed into operation.

"Predicted Interference Contours" and related.[33] For this Fill-in Station rule to be effective, the FCC must define what is meant by "predicted interference contours." For the rule to be fair, it must be adopt standards that apply equally to all licensees, regardless of what service contours and interference contours they have used in their respective applications, Petitions to Deny, and other FCC filings. For the rule to be practical, and not undermine the goals of new licensing in the Third Further Notice of Proposed Rulemaking, it must have one standard for "Fill-in" of service coverage over open water (territorial Seas of the United States, and the Great Lakes: herein together, "Territorial Seas"), and a different one for "Fill-in" of service coverage over land (of inland navigable water bodies and adjacent land area in coverage range of such water bodies; and land areas adjacent to such territorial seas). These are all discussed below.

[33] After writing the text in this Exhibit, I understand from disucssion with the FCC that what was meant here is not interference contour, but service contour. That clear up some of the above discussion.

This Fill-in Station rule allowance is, in reality, a means to obtain additional licensed sites not subject to the "freeze" on new AMTS station licensing imposed in conjunction with the release of the Fourth Report and Order and Third Further Notice of Rulemaking in this Docket. Unless measures as I propose below are adopted, this so-called "Fill-in Station" allowance will, in reality, become a primary or an essential means for some AMTS licensees to perpetuate warehousing of AMTS covering most of the commercially important areas of the United States. It will not at all result in what it appears intended to provide-- for "fill-ins" here and there of areas difficult to cover ("Supplemental Stations") in the otherwise satisfactory, realistic service contours of the Licensed Systems' Component Stations ("Primary Stations"). Instead, it will become the means to convert and salvage Licensed Systems that have employed bogus system engineering for purposes of warehousing--that had Primary Stations spaced far too far apart for commercial viability, at least with respect to coverage over land including navigable inland waterways, and much of the coastlines of the United States which are quite rugged,[34] ("Non-Realistic Systems") into ones that can become commercially

[34] This includes, unrealistic coverage of inland naviable rivers, since most all radio propagation from Compoent Stations covering such rivers take place from such Stations over land befor covering the relatively small amount of water in relation to the amount of land covered. Also, it is questionable if the referred to spacing provides realistic continual coverage even over much of the coastlines of the United States' territorial Seas and Great Lakes that have rugged coastlines. A review of Component Stations authorized by the FCC call into question whether in real-life these provide even close to continuous coverage along the shiping routes close to and to harbors along these coastlines. The radio transmissions from such sites travel over coastal mountain ridges before reaching rugged coastlines and would be blocked from reaching much of the coastline and distances out from the coast. The theoretical RF contour modeling used in the applications do not reveal such real-life coverage problems.

In this regard, the FCC accepted such licensee-applicant proposed spacing (based on such modeling), I assume, with the understanding that the licensees used realistic engineering to meet the FCC's continous-coverage rule, and would, in fact, after licensing, actually provide AMTS service to marine traffic and stand ready to demonstrate these to the FCC: to demonstrate that in fact they are providing continuous coverage to actual marine traffic. *The FCC should at this time*

viable, by use of "Fill-in Stations" that are in fact Primary Stations-- needed for real-life coverage.

Such Non-Realistic Systems served well to warehouse AMTS spectrum for years in most major market of the US. They were not planned for actual continuous coverage as required under FCC rules, but planned with sites spaced for the minimum cost (in application engineering and post-application-grant costs to maintain the licenses).[35] This should not be encouraged and perpetuated by ill-defined rules for Fill-in Stations.

Proposal: There should be one definition or standard with respect to service over Territorial Seas ("Sea Service" and "Sea Contour Standard") and another, encompassing less territory (smaller contours) appropriate for service over the land, herein meaning all areas other than actual radio propagation over Territorial Seas (including, but not limited to: land areas adjacent to Territorial Seas, inland navigable waterways, and land adjacent thereto) ("Land Service" and "Land Contour Standard"). For the Land Contour Standard, I propose the standard described in all my applications for AMTS licenses.[36]

The Licensee planning the Fill-in Station (in this paragraph, the "Licensee") would be required to notify the FCC of all technical operating parameters of the Fill-in Station

---

require proof. The FCC should not at this time allow "Fill-in Stations" to cure systems that were defective from the start-- that were not planned for real-life service, that have not achieved it, and that did not comply with the FCC requirement to provide continuous coverage. Such continuous-coverage rule could not reasonalby be interpreted to mean-- continuous coverage only per theoretical modelling but not possible or demonstrated in real file; and AMTS operations can not mean-- wireless services that use AMTS frequencies but that are not marketed to nor provided to users in vessels on the subject waterways: yet both appear to prevade AMTS.

[35] Costs to lease transmitter site facilities, and costs of transmitter equipment, maintance, etc.

[36] This standard, and all the engineering in these AMTS applications of mine, was prepared by Fox Ridge Communications of Gettsburg, Pennsylvania. Fox Ridge set forth the reaons for such standards in these applications, as well as in my Reply to the Watercom Petition to Deny my applications for AMTS licenses in Texas.

prior to placing it in operation, along with a clear statement as to whether it will be used for solely for Sea Service or to any extent for Land Service. If to be used solely for Territorial Sea Service (for example, a Fill-in Station overlooking a jagged coastline filling-in a "hole" in coverage from the Primary Stations and not intended for any Land Service) then the Sea Contour Standard would be employed. If, however, any Land Service is to be provided by the planned Fill-in Station (for example, a Fill-in Station as just described along a coastline, but intended to also serve population, highways, and/or users on inland navigable waterways which the Licensee was also licensed to serve), then the Land Contour Standard would be solely employed. See Exhibit 1 for a depiction related to the matters in the above paragraph.

The reason for this proposal are 1) radio propagation over large open bodies of water is substantially greater than over land in most all cases,[37] and 2) without using a realistic contour for service over land, incumbent (and potential future) licensees can more easily continue with warehousing spectrum, which has been a prevalent condition in much or most of AMTS licensing to this day, as noted above. This will lead to less spectrum available for new licensing via competitive bidding and geographic licensing as proposed in (or other licensing as may result from) the Third Further Notice of Proposed Rule Making in the Docket captioned above, and blocking of parties who obtain AMTS licenses via such new scheme.

[37] See, e.g. any of the applications I have submitted for AMTS in which this is discussed. See also my Reply to the Watercom Petition to Deny my AMTS applications in Texas.

Further to the above: As I have written, with evidence, in previous filings with the FCC,[38] many of such stations have not, in their extended periods in existence, been substantially operated (or operated at all) for providing AMTS service to marine traffic on the seas, but rather, have been a means to obtain and hold large ("warehouse") large amounts of AMTS in major US markets along the Atlantic and Pacific Coasts, the Great Lakes, and other major bodies of water. Use of "Fill-in Stations" in such systems to now obtain realistic commercially-viable coverage (not just enhancements, but the type of fundamental coverage that should have been engineered and proposed to the FCC in the first place, when submitting for a license, or at least well before years of warehousing have taken place) for land-based wireless services is an inappropriate concession. It would simply be a further means to maintain such warehousing and block service by licensees who acquire geographic licenses spanning the areas with the AMTS warehoused with the aid of such Fill-in Stations. For example, if such a licensee had been allowed a contour so large as to cover all of the California Coast and all its inland areas with three stations (to use an extreme example to make the point), and then to use "Fill-in Stations," such licensee would have been granted a license based on an unrealistic proposed system (that never would, in real life, provide commercially viable multi-site coverage, especially over land) to warehouse at low cost (easy to engineer such a system application, and cheap to build and maintain it to sustain the warehousing) the subject AMTS in California, and then, via the Fill-in Stations, turn it into a real system. The proposal I made above would in large part prevent this, yet allow legitimate "Fill-in Stations" as described in this proposal.

[38] Various Petitions to Deny and responses to Petitions to Deny,

Fill-in Stations with contours beyond existing contours. As noted above, 80.475(b) provides that proposed stations include those that extend the existing system's interference contours only over water or uninhabited islands. I propose that this be modified to include, at the end, language to this effect: "or whose proposed interference contours [Sea Contours or Land Contours, as the case may be],[39] upon a showing to the FCC,[40] cover only land area whose usage by persons is minimal (i.e., that is functionally the equivalent to that of the above-described open water or uninhabited islands)." I propose this since there are areas of land adjacent to some inland waterways, including those I am licensed to serve, that are basically desolate, however the subject waterway in such areas is used. For example, Fill-ins Stations I am considering to serve the eastern part of Lake Meade (a very difficult area due to the Lake in real-life being in a deep jagged canyon) would greatly enhance service to that part of the Lake, which gets substantial use, but it would also extend the Licensed System's contours over the nearby land. Such nearby land is virtually unpopulated. Similar situations exist with may other licenses.

[39] Per my proposal in the text above.

[40] This would leave it to the FCC to determine whether to accept such showing or not. The FCC could weight he value to the licensee and public of increased Fill-in Station service to the subject waterway vs. Its apparent goals to retain AMTS spectrum for new licensing arrangements.